Company	Trenz Electronic GmbH
PCN Number	PCN-20250401
Title	TE0835-02 to TE0835-03 Hardware Revision Change
Subject	Hardware Revision Change
Issue Date	2025-05-26

Products Affected

This change affects all Trenz Electronic TE0835 SoMs of revision 02: TE0835-02*.

Affected Product	Changes	Replacement
TE0835-02-MXE21-A	#1 ... #32	TE0835-03-MXE81-A
TE0835-02-TXE21-A	#1 ... #32	TE0835-03-TXE81-A
TE0835-02-TXE21-AK	#1 ... #32	TE0835-03-TXE81-AK
TE0835-02-TXE21-AS	#1 ... #32	TE0835-03-TXE81-AS (on request)
TE0835-02-TXE81-A	#2 ... #32	TE0835-03-TXE81-A
TE0835-02-TXI21-A	#1 ... #32	TE0835-03-TXI81-A
TE0835-02-UXE21-A	#1 ... #32	TE0835-03-UXE81-A

Changes

#1 Changed DDR4 SDRAM (U2, U3, U5, U9) from K4A8G165WB-BIRC to K4A8G165WC-BITDTCV and changed resistor (R65, R82, R86, R87) from 240 Ohm to zero Ohm.

Type: Schematic Change

Reason: EOL of Component.

Impact: DDR timing needs to be considered in customer design. Trenz Reference Design reflects it without changing timing but custom firmware needs to be checked and eventually updated by customer.

#2 Changed power supply structure completely, including increased voltage range for input power rail "VIN" from 5 V to 5 V ... 12 V and changed power-up sequence.

Type: Schematic Change

Reason: Increase current capability and improve noise level.

Impact: Check that new power supply fits your requirements.

#3 Changed MOSFET (T1, T2) from AO7800 to EM6K34T2CR.

Type: Schematic Change

Reason: Improve component placing.

Impact: None. Minor changes in electrical characteristics.

#4 Changed crystal CX3225SB54000 (Y1) to ECS-540-8-33-JTN-TR.

Type: Schematic Change

Reason: BOM Optimization.

Impact: None. Minor changes in electrical characteristics.

#5 Changed MEMS oscillator (U12) from SiT8008AI-73-XXS-52.000000E to SiT8008BI-73-XXS-52.000000E

Type: BOM change

Reason: EOL of Component.

Impact: None. Clock revision changed.

#6 Modified I2C structure.

- Divided 1.8 V I2C voltage level to 1.8 V voltage level part and 3.3 V voltage level part via voltage level translator (U26).
- Moved EEPROM (U23) from 1.8 V I2C voltage level part to 3.3 V I2C voltage level part. Changed supply voltage for EEPROM (U23) from 1.8 V to 3.3 V.
- Added CryptoAuthentication chip (U27 [REV03]) to 3.3 V I2C part.

Type: Schematic Change

Reason: Added CryptoAuthentication unit and improved I2C functionality.

Impact: None.

#7 Modified LED circuit:

- Added level shifter (U19) to connect LEDs from 1.8 V voltage rail to 3.3 V voltage rail.
- Changed 39 Ohm series resistors (R77A ... R77D) to 1 kOhm resistors (R77, R130, R132, R134).
- Renamed LED designators according to following table.

Old designator (TE0835-02)	**New designator (TE0835-03)**
D2	LED0
D3	LED1
D4	LED2
D5	LED3

Type: Schematic Change

Reason: Improve LED behaviour.

Impact: None.

#8 Added POR_OVERRIDE (U1) configuration option via signal "POR_OVERRIDE". This signal is connected to transistor T2A which is controlled by system controller (U31) via signal "POR_OVERRIDE_N". This signal is connected to system controller (U31) pin 33 instead of signal "SRST_B".

Type: Schematic Change

Reason: Enable POR_OVERRIDE feature usage.

Impact: Signal "SRST_B" is not managable via system controller anymore. Firmware reflects it but custom firmware change may be needed by customer.

#9 Added resistor (R121 [REV03], R122 [REV03], R124, R150, R153) and capacitor (C489) to add power rail "VIN" measurement possibility.

Type: Schematic Change

Reason: Enable system monitor differential analog input feature.

Impact: None.

#10 Added pull-up resistor for "HOLD"-function (R143, R145) and "WP"-function (R142, R144) for flash (U24, U25).

Type: Schematic Change

Reason: Enhance usable SPI devices.

Impact: None.

#11 Added pull-up resistor for signal "FPGA_IO0" (R154) and "FPGA_IO1" (R155).

Type: Schematic Change

Reason: Enable I2C connection between system controller (U31) and RFSoC (U1).

Impact: None.

#12 Set pull-up resistor (R79) for signal "DDR4-BG1" to not assembled and added pull-down resistor (R165).

Type: Schematic Change

Reason: Improve signal "DDR4-BG1" setup.

Impact: None.

#13 Changed 75 kOhm resistor (R75) to 20 kOhm.

Type: Schematic Change

Reason: Improve signal voltage level.

Impact: None. Minor changes in electrical characteristics.

#14 Removed 10 µF capacitor (C180 [REV02]) from power rail "PSBATT" for RFSoC (U1 pin V24).

Type: Schematic Change

Reason: Increase FPGA clearance to enhance cooling solution options.

Impact: Minor changes in electrical characteristics.

#15 Added 4.7 µF capacitor (C355 [REV03], C488) for power rail "DDR_VTT".

Type: Schematic Change

Reason: Improve power rail integrity.

Impact: None. Minor changes in electrical characteristics.

#16 Added additional decoupling capacitor (C415 ... C418, C481) for system controller (U31).

Type: Schematic Change

Reason: Improve power rail integrity.

Impact: None. Minor changes in electrical characteristics.

#17 Added additional decoupling capacitor (C476 ... C479) for power rail "DDR_VTT".

Type: Schematic Change

Reason: Improve power integrity.

Impact: None. Minor changes in electrical characteristics.

#18 Added additional decoupling capacitor (C385) for power rail "DDR_VREFA".

Type: Schematic Change

Reason: Improve power integrity.

Impact: None. Minor changes in electrical characteristics.

#19 Changed capacitor (C24, C32, C97, C130 ... C136, C150 ... C152, C155, C190, C191, C203, C204, C214, C216) from 10 nF, 10 V, X7R to 100 nF, 6.3 V, X5R.

Type: Schematic Change

Reason: Improve signal quality.

Impact: None. Minor changes in electrical characteristics.

#20 Changed 1.69 kOhm resistor (R38, R74) to 2.2 kOhm.

Type: Schematic Change

Reason: Improve signal quality.

Impact: None. Minor changes in electrical characteristics.

#21 Changed capacitor (C365) from 470 nF, 6.3 V, X5R to 100 nF, 50 V, X7R.

Type: BOM Change

Reason: BOM Optimization.

Impact: None. Minor changes in electrical characteristics.

#22 Changed 2.2 µF capacitor (C2, C3, C21, C22, C53 ... C57, C70 ... C72, C248, C249) from 6.3 V to 25 V.

Type: BOM Change

Reason: BOM Optimization.

Impact: None. Minor changes in electrical characteristics.

#23 Changed capacitor (C231) from 47 µF, 6.3 V, X5R, 20 % to 10 µF, 25 V, X7R, 10 %.

Type: BOM Change

Reason: BOM Optimization.

Impact: None. Minor changes in electrical characteristics.

#24 Changed capacitor (C82, C153) from 47 µF, 6.3 V, X5R, 20 % to 100 µF, 4 V, X6S, 20 %.

Type: BOM Change

Reason: BOM Optimization.

Impact: None. Minor changes in electrical characteristics.

#25 Changed 10 nF capacitor (C112) from 16 V to 50 V.

Type: BOM Change

Reason: BOM Optimization.

Impact: None. Minor changes in electrical characteristics.

#26 Changed system controller (U31) from commercial to industrial temperature grade.

Type: Schematic Change

Reason: Improved temperature grade.

Impact: Changes in temperature characteristics.

#27 Changed ferrite bead (L2, L3, L5, L7, L10, L12 ... L14, L16) from BKP0603HS121-T to MPZ0603S121HT000.

Type: BOM Change

Reason: EOL of component.

Impact: Increase current capability, decreased DC resistance and minor changes in electrical characteristics.

#28 Changed ferrite bead (L8, L9) from LI0402E300R-10 to BLM15PX121SN1D.

Type: Schematic Change

Reason: Increased current rating.

Impact: None. Minor changes in electrical characteristics.

#29 Changed clock signal name.

- CLK0A_100MHz_P to PLL_CLKOUT_P
- CLK0A_100MHz_N to PLL_CLKOUT_N

Type: Schematic Change

Reason: Improve readability.

Impact: None.

#30 Added additional test point (TP3, TP22 ... TP62).

Type: Schematic Change

Reason: Improve measurement possibilities.

Impact: None.

#31 Added UKCA-logo.

Type: PCB Change

Reason: Improve product classification.

Impact: None.

#32 Updated layerstack.

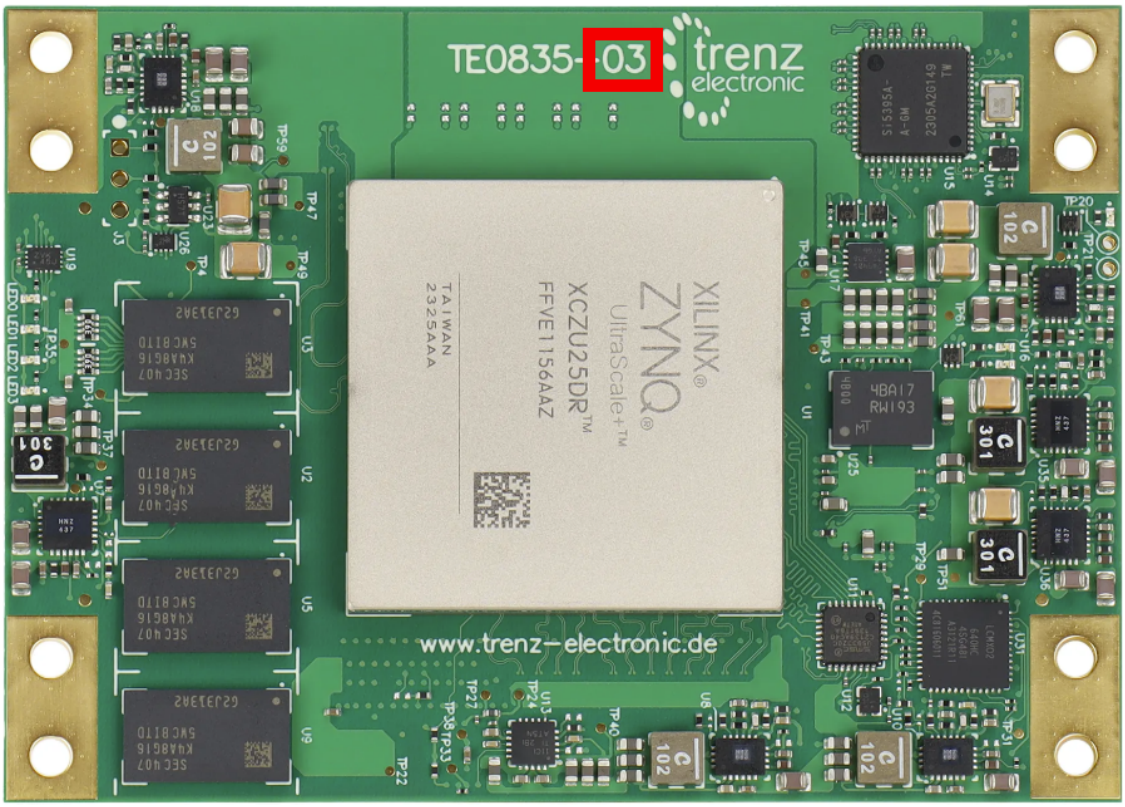
Type: PCB Change

Reason: Improve power supply circuits and trace impedances.

Impact: Improved power supply and trace impedance behaviour.

Method of Identification

The revision number is printed on the top side of the PCB.



Production Shipment Schedule

This change takes place with immediate effect. If the new revision is not suitable for your application and still the former version of the board is needed, please contact us.

Contact Information

If you have any questions related to this PCN, please contact Trenz Electronics Technical Support at

- forum.trenz-electronic.de
- wiki.trenz-electronic.de
- support%trenz-electronic.de (subject = PCN-20250401)
- phone
  - national calls: 05741 3200-0
  - international calls: 0049 5741 3200-0

Disclaimer

Any projected dates in this PCN are based on the most current product information at the time this PCN is being issued, but they may change due to unforeseen circumstances. For the latest schedule and any other information, please contact your local Trenz Electronic sales office, technical support or local distributor.

This PCN follows JEDEC Standard J-STD-046.